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## Anaphylactoid Reaction During Cadaveric Kidney Transplantation

Edward Mariano MD, Eric Amador MD, Stanford University School of Medicine  
Stanford University School of Medicine

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**Introduction:** Allergic reactions are exceedingly rare in the operating room, occurring once in every 5,000-25,000 anesthetics (1). Kidney transplants are very common operative procedures that require the administration of various medications perioperatively including diuretics, antibiotics, steroids, and other immunosuppressants which may all result in a potential allergic reaction. We present a case of a probable anaphylactoid reaction to mannitol during a kidney transplant.

**Case Report:** A 62 year-old man with a history of end-stage renal disease of unknown etiology and previous cadaveric kidney transplant in 1994, presented for a redo cadaveric kidney transplant due to chronic rejection. He had a past medical history significant for a right bundle branch block, first-degree AV block, hypertension, bipolar disorder, and polio. His preoperative stress thallium test demonstrated a small fixed perfusion defect in the inferior wall and a dilated LV with normal LV ejection fraction of 59%. The donor was CMV negative and the kidney was a 6/6 antigen match. The patient was taken to the operating room where an arterial line was placed in addition to standard monitors. After uneventful induction of general anesthesia, a central venous triple-lumen catheter was inserted, and the patient was given hydrocortisone, cefazolin, and anti-thymocyte globulin. The patient was stable for the duration of the initial dissection and vascular anastomoses. Mannitol 12.5 g and furosemide 80 mg were given intravenously just prior to reperfusion. The patient became progressively hypotensive over the next 15 minutes with a decrease in MAP from 80 mm Hg to 50 mm Hg. The peak inspiratory pressure increased 4 cm H<sub>2</sub>O, and O<sub>2</sub> saturation decreased from 98% to 95% on 0.30 FiO<sub>2</sub> in the absence of wheezing, flushing, or change in end-tidal CO<sub>2</sub>. His hypotension was unresponsive to ephedrine, calcium chloride, and phenylephrine boluses, but his blood pressure did improve slightly after epinephrine administration. Intraoperative TEE was performed which showed septal hypokinesis, a "D" shaped LV, mild MR, and a moderately dilated RV. A pulmonary artery catheter was placed which revealed PAP 53/21 and CO 18 l/min. The patient's blood pressure and oxygenation improved steadily on epinephrine and dopamine infusions. Due to the patient's low SVR, epinephrine and dopamine were gradually discontinued, and a norepinephrine infusion was started. He remained normotensive for the duration of the surgery and was taken to the ICU intubated on a norepinephrine infusion. He was weaned from ventilatory support and pressors by the first postoperative day. He ruled out for myocardial infarction by enzymes and EKG and remained stable for the duration of his hospital course.

**Discussion:** Anaphylactic (IgE mediated) and anaphylactoid reactions are clinically indistinguishable (2). Anaphylactoid syndromes occur as a result of nonimmunologic stimulation of mast cells. An anaphylactoid reaction to mannitol was described previously in a pediatric patient in 1979 (3), and one case of anaphylaxis was described in a German case report (4). We suspected a reaction to mannitol during our case due to the timing of its administration and the resultant hemodynamic effect. Furosemide was not thought to be the cause since it was among the patient's outpatient medications. Anti-thymocyte globulin had been infusing for the majority of the surgery which made it unlikely. It is crucial to maintain vigilance when giving any drug and treat suspected anaphylactoid reactions early. Hypotension of any duration puts the new graft at risk for hypoperfusion and potential failure (5).

### References:

1. Barash PG. Clinical Anesthesia. 4<sup>th</sup> ed. Lippincott Williams & Wilkins 2001: Philadelphia, PA. 1297-1308.
2. Weiss ME, et al. Evaluation of Allergic Drug Reactions in the Perioperative Period. *Anesthesiology* 1989 Oct; 71: 483-5.
3. Lamb JD, Keogh JA. Anaphylactoid Reaction to Mannitol. *Can Anaesth Soc J* 1979 Sep; 26(5): 435-6.
4. Biro P, et al. [A Life-threatening Anaphylactic Reaction Following Mannitol]. *Anaesthesist* 1992 Mar; 41(3): 130-3.
5. Sprung J, et al. Anesthesia for Kidney Transplant Surgery. *Anes Clin of North Am* 2000 Dec; 18(4): 919-951.

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## **Cleaned Reusable Laryngoscope Blades Contain Protein Deposits**

Parag N. Mathur, M.D., James R Trudell, Ph.D., Lawrence F. Chu, M.D., M.Sc. and John G Brock-Utne, M.D., Ph.D., FFA(SA).

*Stanford University School of Medicine*

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**Introduction:** Previous studies have demonstrated blood and microbial contamination on cleaned reusable anesthesia equipment. The demonstration of prion proteins in human tonsillar tissue has raised the question of transmission of variant Creutzfeldt-Jakob (vCJD) disease from anesthetic equipment exposure. Many institutions in the U.K, where prion-based disease is of greatest concern, have already switched from reusable laryngoscopes to disposable devices. Now that there have been two reported cases of vCJD in North America, we have decided to investigate the cleanliness of reusable laryngoscope blades. A recent study by these authors has already demonstrated protein contamination on cleaned reusable LMAs at an American university hospital.

**Methods:** 30 previously used, cleaned laryngoscope blades were collected from the operating rooms of an American university hospital. Six used, unclean blades were collected as positive controls, and two new, unused blades were used as negative controls. All 38 blades were stained for 20 minutes at room temperature using erythrosin B dye (1% solution.) The blades were rinsed with water and evaluated by three investigators in a blinded manner. The level of staining was graded from 0 (no noted staining) to 3 (very heavy staining) using strict criteria. The final scores for each blade was the arithmetic mean of each individual score.

**Results and Discussion:** We found some degree of protein staining on almost every previously used, cleaned blade. In general, staining was noted in the crevices around the replaceable light bulb, and at the junction of the blade with the handle. The mean score for cleaned reusable blades was 1.11 (95% confidence interval 0.86 to 1.37) while unclean blades scored 1.90 (95% CI 1.15 to 2.65) and the new blades were clean (both scored zero.) While it is important to note that the cleaned blades were statistically indistinguishable from the blades just removed from the patients' oropharynx, it is also important to note that 4 of the cleaned blades (13%) had a score of 2 or greater. This indicates at least a moderate amount of staining on a significant portion of the blades which we place in patients mouths every day.

Subgroup analysis did not show any difference between blades which were autoclaved in the process of cleaning and those which were cleaned with a purely chemical process.

**Conclusion:** This study demonstrates protein staining on laryngoscope blades that had been cleaned using conventional methods. While the clinical significance of this protein staining is unclear, the presence of these deposits may be of importance. In addition to study of disposable devices, laryngoscopes which contain the light source in the handle as opposed to the difficult to clean blade should be areas of further study.